PXT Series Pressure Transmitters Installation Instructions

Please read the following information before installing.
A visual inspection of this product for damage during shipping is recommended before mounting.

WARNING

This Murphy instrument is susceptible to damage when exposed to static electrical charges. To avoid damage, observe the following:

- ✔ Ground transmitter body before making electrical connections.
- ✔ When disconnecting, remove ground connection last.
- ✔ Disconnect all electrical power to the machine.
- ✔ Make sure the machine cannot operate during installation.
- ✔ Follow all safety warnings of the machine manufacturer.
- ✔ Read and follow all installation instructions.

Listed for Class I, Div. 2, Groups A, B, C, D and Div. I, Grps. A, B, C, D with a Barrier

Description

The PXT Series pressure transmitters are state-of-the-art instruments providing 4 to 20 mA outputs. They feature a precision micro-machined silicon diaphragm with fully welded stainless steel pressure port for greater accuracy, stability and a wide range of compatibility. All wetted parts are 316L stainless steel or Hasteloy C276.

Specifications

Accuracy (Full Scale, Best Straight Line): ±0.25% including non-linearity, hysteresis and repeatability. Long term stability better than 0.2% FS over twelve (12) months.

Zero Setting: ±0.5% of full scale (0.25% typical).

Span Setting: ±0.5% of full scale BSL (RSS).

Overpressure/Proof Pressure: 400% for up to 500 psi (3.45 MPa) [34 Bar]. 200% for higher ranges.

Burst Pressure:
Ranges 0-1000 psi = 600% of full scale or 4000 psi whichever is lower.
Ranges 2000 psi 13.79 MPa) [137 Bar]= 20,000 psi (27.5 MPa) [275 Bar].

Response Time: Frequency response better than 2 kHz.

Storage Temperature: *-65 to 200°F (-54 to 93°C).*

Operating Temperature: *-40 to 180°F (-40 to 82°C).*

Compensated Temperature: *-20 to 160°F (-29 to 71°C).*

Total Thermal Effects Over Compensated Range: ±2% FS TEB.

Physical:
Enclosure: *Weather Resistant.*
Body: *316 stainless steel. Meets NACE MR01-75.*
Wetted Parts: *316L stainless steel or HASTELLOY C276.*
Process Connection: *1/4 NPT female.*
Electrical Cable: *Integral; 60 in. (914 mm); vented.*
1/2 in. NPT male conduit connection

Environmental Effect:
Humidity: *No effect.*
Mounting: *Position/orientation has negligible effect.*
Reverse polarity protected

Shock: 1000g 1ms Half sine Pulse in each of 3 mutually perpendicular axis will not affect performance.

Vibration: Effect on output response is less than 0.05% FS/g at 30g Peak 10Hz to 2kHz, limited by 0.05 in double amplitude. (MIL STD 810C Proc. 514.2-2 curve L).

PXT Power Requirements: Typically 24 VDC is required, using the Loop Resistance Graph, 9-30 VDC.

PXT Series Transmitter Output: 4–20 mA, 2-wire.

Insulation: Greater than 10 Mohms @ 500 VDC.

RFI Protection: To the European standards of BS EN 50082-2:1991 in accordance with IEC 801 parts 1 to 6 for suspectibility to EMC and to BS EN 50081-1992 for emissions.

Voltage Surge/Spike: Protected against a 600 V spike to IEC 60-2. Reverse polarity protected.

Sealed: Sealed at one atmosphere at sea level for ranges > 1000 psi (6.89 MPa) [68 Bar].

Vented: Vented for ranges < = 1000 psi (6.89 MPa) [68 Bar].

Laboratory Approvals: UL/cUL Class I, Div. 1, Groups A, B, C, D. Class II, Division 1, Groups E, F, G; when installed with approved barrier per drawing 05-08-0754 UL/cUL Class I, Div. 2, Groups A, B, C, D. Class II Groups E, F, G, non-incendive per drawing 05-08-0754.

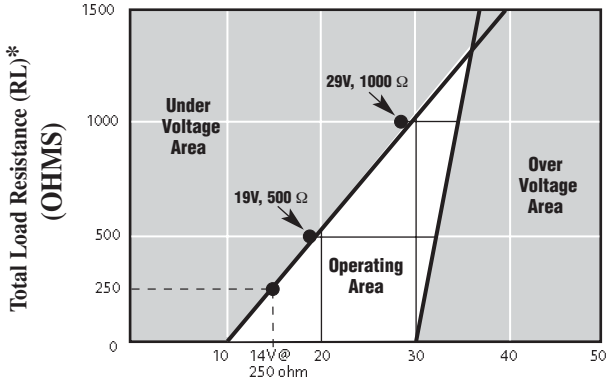
Ranges Available†

Pressure Range†:			
Specify	*For this range*		
30V30WC	-30" H20 to +30" H20 (-76 cm H20 to +76 cm H20) [+/-0.075 Bar]		
30V30	-30" Hg to +30 psig (-76 cm Hg to 207 kPa) [2.07 Bar]		
30V100	-30" Hg to +100 psig (-76 cm Hg to 689 kPa) [6.89 Bar]		
15	0-15 psi	(103.4 kPa)	[1.03 Bar]
60	0-60 psi	(413.7 kPa)	[4.13 Bar]
100	0-100 psi	(689 kPa)	[6.89 Bar]
200	0-200 psi	(1.38 kPa)	[13.78 Bar]
300	0-300 psi	(2.07 kPa)	[20.67 Bar]
400	0-400 psi	(2.75 MPa)	[27.56 Bar]
600	0-600 psi	(4.14 kPa)	[41.34 Bar]
1000	0-1,000 psi	(6.89 MPa)	[68.9 Bar]
2000	0-2,000 psi	(13.79 MPa)	[137.8 Bar]
3000	0-3,000 psi	(20.69 MPa)	[206.7 Bar]
5000	0-5,000 psi	(34.48 MPa)	[344.5 Bar]
6000	0-6,000 psi	(41.37 MPa)	[413.4 Bar]

†NOTE: Conversions are approximate.

Loop Resistance Graph

Supply voltage for the PXT must be within range of 9-30 VDC. The Graph below shows the minimum supply voltage (VDC) required for a given load resistance (RL).

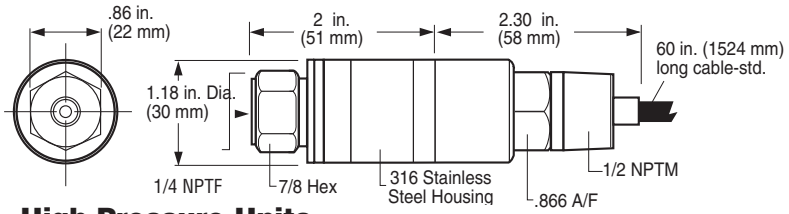


*NOTE: Cable resistance effect included in RL.

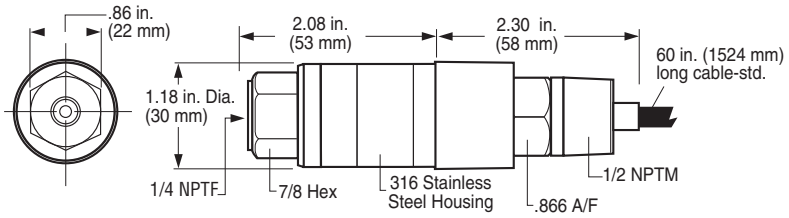
Phase-out / Discontinued Product
Check Availability

PXT Series Dimensions

Low Pressure Units



High Pressure Units



PXT Series Electrical Connections

CAUTION: Hookup Cable is not serviceable.
DO NOT unscrew cap nut.

RED CABLE = **+** Power
BLUE CABLE = **-** Power
Orange, Yellow, White & Shield = No Connection

For more information about cable colors and identifying the PXT Series Pressure Transmitter, see page 3 of this document.

INSTALLATION DIAGRAM

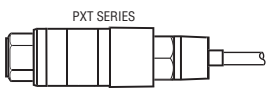
HAZARDOUS AREA

INSTALLATION INSTRUCTIONS FOR CLASS I DIV 2

UNITS MEET CLASS I DIV 2 WHEN INSTALLED IN ACCORDANCE WITH CLASS I DIV 2 METHODS. EITHER BY USING THE CONDUIT AND GROUND CONNECTION PROVIDED OR BY INSTALLING IN A SUITABLE ENCLOSURE ACCEPTABLE TO THE LOCAL AUTHORITY HAVING JURISDICTION.

INSTALLATION INSTRUCTIONS FOR CLASS I DIV 1

Class I, Groups A, B, C, D
Class II, Groups E, F, G



TRANSMITTER ENTITY PARAMETERS

TERMINALS	VMAX	IMAX	CI	LI
POS - NEG	28 V	93 mA	0.11 µF	0.22 mH

Vmax >= Voc
I max >= Isc
Ci + C cable =< Ca
Li + L cable =< La

USE THE FOLLOWING PARAMETERS IF CABLE PARAMETERS ARE UNKNOWN.

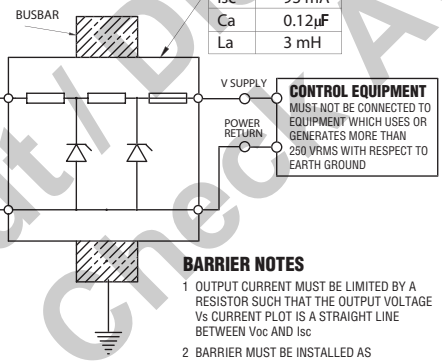
CABLE CAPACITANCE: 60 pF/ft
(EX.Cable=1000ft x 60pF/ft=0.06 µF)

CABLE INDUCTANCE: 0.2 µH/ft
(EX.L Cable=1000ft x 0.2 µH/ft=0.2mH)

ALL INTRINSICALLY SAFE WIRING SHALL BE KEPT SEPARATE FROM NON-INTRINSICALLY SAFE WIRING. REFER TO ARTICLE 504 OF THE NATIONAL ELECTRICAL CODE OR THE CANADIAN ELECTRICAL CODE.

SAFE AREA

POWER BARRIER	
Voc	28 V
Isc	93 mA
Ca	0.12µF
La	3 mH


BUSBAR
V SUPPLY
POWER RETURN
CONTROL EQUIPMENT
MUST NOT BE CONNECTED TO EQUIPMENT WHICH USES OR GENERATES MORE THAN 250 VRMS WITH RESPECT TO EARTH GROUND
EARTH GND

BARRIER NOTES

1. OUTPUT CURRENT MUST BE LIMITED BY A RESISTOR SUCH THAT THE OUTPUT VOLTAGE Vs CURRENT PLOT IS A STRAIGHT LINE BETWEEN Voc AND Isc
2. BARRIER MUST BE INSTALLED AS INSTRUCTED BY THE MANUFACTURER
3. SELECTED BARRIER INTRINSICALLY SAFE CIRCUITS SHALL BE APPROVED FOR CLASS I, II, III DIV 1 & 2, GROUPS A-G
4. TERMINATE BARRIER EARTH GROUND TO THE GROUND BUS OF THE POWER DISTRIBUTION PANEL. RESISTANCE TO GROUND MUST NOT BE GREATER THAN 1 OHM

WARNING: READ BEFORE INSTALLATION

Fluid hammer and surges can destroy any pressure transmitter/transducer and must always be avoided. A pressure snubber should be installed to eliminate the damaging hammer effects.

Fluid hammer occurs when a liquid flow is suddenly stopped, as with quick closing solenoid valves. Surges occur when flow is suddenly begun, as when a pump is turned on at full power or a valve is quickly opened. Liquid surges are particularly damaging to pressure transmitter/transducer if the pipe is originally empty. To avoid damaging surges, fluid line should remain full (if possible), pumps should be brought up to power slowly and valves operated slowly. To avoid damage from both fluid hammer and surges, a surge chamber should be installed, and a pressure snubber, such as Murphy PD-8100 Series (adjustable) or PM6203 Series (fixed) call Murphy for details, should be installed on every transmitter/transducer.

Symptoms of fluid hammer and surges damaging effects:

a. Pressure transmitter exhibits an output at zero pressure (large zero offset).

b. Pressure transmitter output remains constant regardless of pressure.

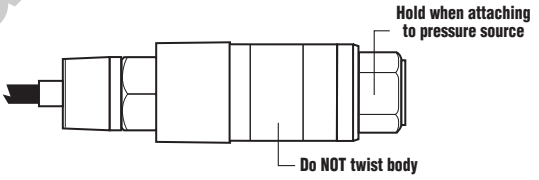
c. In severe cases, there will be no output.

Noise

For minimum noise susceptibility avoid running the transmitters/transducers cable in a conduit that contains high current AC power cables or ignition loom on engine. Where possible avoid running the cable near inductive equipment. Shielded cable is always recommended. Earth the shield at one end only.

Mounting

CAUTION: THESE ARE PRECISION INSTRUMENTS. DO NOT INSTALL IN ANY MANNER THAT CAN CAUSE SIDE STRESS OR IS SUBJECT TO EXCESSIVE VIBRATION.



The transmitter/transducer requires no special mounting hardware and can be mounted in any plane with negligible position error.

Although the unit can withstand substantial vibration without damage or significant output effects, it is always good practice to mount the transmitter where there is minimum vibration.

Apply Teflon tape/sealant to the pressure fittings threads before installing. When tightening, apply a wrench to the hex wrench flats located just above the pressure fitting. **DO NOT** tighten by using a pipe wrench on the housing.

Please-out / Discontinued Product
Check Availability

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PXT and PXT-K Series Pressure Transmitter Cabling Identification

The PXT Series Pressure Transmitters have been changed. Previous pressure transmitters in this series were identified as ***PXT Pressure Transmitters***. The newest version is the ***PXT-K Series Pressure Transmitters***. Identification of electrical cable color is NOT interchangeable between the two series of pressure transmitters.

This document contains information to assist you in identifying the pressure transmitter unit you have and the correct electrical cable colors to avoid wiring mistakes.

PXT SERIES	PXT-K SERIES
Indentations on the hex coupling for controlled locking. Product has a step-down between the transmitter body and hex coupling.	No step-down between the body and the hex coupling. No indentations on the hex coupling.

Cable Color	Connection	Cable Color	Connection
RED	POWER	RED	POWER
BLUE	SIGNAL	BLUE	N/A
BLACK	CASE GROUND	BLACK	SIGNAL
ORANGE, YELLOW, WHITE	N/A	ORANGE, YELLOW, WHITE	N/A
Installation Instructions	00-02-0475	Installation Manual	00-02-0840
Installation Diagram	05-08-0754	Installation Diagram	05-08-0763

Phase-out / Discontinued Product
Check Availability